

TAXONOMIC ASSESSMENT AND A DICHOTOMOUS KEY FOR THE IDENTIFICATION OF FIVE SRI LANKAN WILD RICE SPECIES (*Oryza* spp.) WITH MORPHOLOGICAL AND ECOLOGICAL INSIGHTS

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Abstract

Sri Lanka harbors five wild *Oryza* species: *O. nivara*, *O. rufipogon*, *O. eichingeri*, *O. granulata*, and the endemic *O. rhizomatis*. Accurate taxonomic identification of these species is essential for biodiversity conservation and rice genetic improvement. However, it remains challenging due to overlapping morphological characters and habitat-driven variations. This study develops a dichotomous identification key for Sri Lankan wild *Oryza* species based on detailed morphological traits and ecological preferences. Field surveys were conducted across the dry, intermediate, and wet zones in diverse habitats. Results reveal clear diagnostic characters distinguishing the five species, supported by significant segregation in morphological traits. Kruskal-Wallis test was performed to evaluate the interspecific differences. The embryo: seed length ratio of *O. granulata* and *O. eichingeri* was found to be significantly higher compared to the other species, whereas *O. rufipogon* exhibited a significantly lower ratio ($H = 13.4$, $P = 0.009$). The seed shape index of *O. nivara* and *O. rufipogon* was significantly higher compared to the other species, while *O. rhizomatis* exhibited a significantly lower index ($H = 61.44$, $P = 1.292 \times 10^{-12}$). The seed coat ratio (SCR) of the rice species differed significantly ($H = 18.29$, $P = 0.00109$), with *O. nivara* and *O. rhizomatis* exhibiting SCR values greater than 0.5. Morphological traits such as awn, rhizome, leaf length, panicle structure, stigma colour and presence of pubescence on lemma or palea shows vast variation among species. Principal component Analysis (PCA) shows the deviation in the qualitative parameters among the species. Also the wild rice species shows variation in their micro habitat conditions: *O. nivara* and *O. rhizomatis* dominate dry zones, *O. rufipogon* prefers intermediate/wet regions, *O. eichingeri* occurs at forest edges, and *O. granulata* thrives in shaded, moist forests. We proposed a dichotomous key integrating morphological and ecological data, providing a robust framework for species identification, biodiversity assessments, and conservation planning.

Keywords: Conservation, Dichotomous Key, Identification, Taxonomy, Wild Rice

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